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REMARKS

In the Office Action dated March 30, 2006, claims 1-2, 4-10, and 12-24 are pending. Claims 1, 10, and 17 are independent claims from which all other claims depend therefrom. Claim 1 and 17 are herein amended only for clarification reasons. The amendments do not raise new issue that would require further examination or search, especially since they are inherent in the term "low-pressure cavity" and what is meant by the term "low-pressure cavity" is provided in the specification of the present application.

Rejection of claims 1-2, 4, 7, 9, and 17-20 under 35 U.S.C. 103(a)

Claims 1-2, 4, 7, 9, and 17-20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bernacki (U.S. 4,119,855) in view of Meyer et al. (U.S. 6,002,202) and Barrett (U.S. Pat. No. 6,674,838).

Amended claim 1 recites a sealed electron beam source for an imaging tube that includes a source housing with a non-apertured source window that forms a sealed structure with the source housing. The source window separates a source interior from an external low-pressure cavity, which is at a pressure that is less than the standard atmospheric pressure (1 atm). The source electrode emits electrons through the source window to a target external to the source housing. The target is internal to the imaging tube. The source window includes feedthroughs for a coolant to flow therein and absorb heat from the source window.

Amended claim 17 recites similar limitations as that of claim 1. Claim 17 recites a method, which includes the sealing of a source housing from an external vacuum cavity that is within an imaging tube. The method also includes forming the vacuum cavity with the source housing and a target and filling the vacuum cavity with low-pressure gas. Electrons are directed through the source window to the target.

Bernacki discloses an electron beam source 48 that has an electron gun 50 that is within an enclosure 54. The enclosure 54 is pumped to a vacuum and thus has an interior that is at low pressure. The enclosure 54 has an opening or orifice 58

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through which a beam of electrons 52 is emitted. The beam is transmitted into an open-ended enclosure 64 to a target 60. The area within the enclosure 64 is open and is at one atmosphere or, in other words, atmospheric pressure.

The Office Action states that Bernacki discloses a source window that separates a source interior from an external low-pressure cavity, and refers to the enclosure 64. Applicants submit that the area within the enclosure 64 is not at low-pressure, but rather is at atmospheric pressure. Applicants submit that in reciting a "low-pressure cavity" the Applicants clearly were reciting a cavity that is at a pressure less than one atmosphere, hence the use of the term "low-pressure".

The Office Action states that Bernacki fails to disclose the limitations of a non-apertured source window forming a sealed structure and a source window having feedthroughs. Applicants agree. The Office Action, however, states that Meyer teaches a non-apertured source window and refers to the title and col. 1, lines 12-15, of Meyers for such reliance. The title of Meyers is "Rigid Thin Windows for Vacuum Applications". Applicants submit that clearly windows have been used in vacuum applications, such as between a target of an x-ray tube and a patient. However, windows have not been used, as claimed, on an electron beam source, between an electron source and a target. The title of Meyers does not suggest such use. In col. 1, lines 12-15, Meyers states that windows are described for vacuum applications, such as electron guns or x-ray detectors. Again, this does not suggest the use of a window as claimed to seal an electron source from a low-pressure cavity containing a target. Electron guns are used in various applications in which they are not within a low-pressure cavity. Like Bernacki, Meyers, in col. 1, lines 38-46, states that the electron guns are used to generate electron beams in air and that the windows must withstand the pressure differential from within the electron gun and the external atmospheric pressure (1 atm) outside. Therefore, Meyers, like Bernacki, only contemplates the use of a window in applications in which an electron beam is generated in air at normal atmospheric pressure.

Also, nowhere in Meyers is a sealed electron beam disclosed. The use of a window does not in and of itself suggest that the source is sealed.

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Since Bernacki and Meyers fail to teach or suggest feedthroughs, the Office Action relies on Barrett for such teaching. Applicants have shown in previous Responses that Barrett fails to teach or suggest a sealed non-apertured window as claimed. As such, Barrett also fails to teach or suggest such a window with feedthroughs. Also, item 58 of Barrett, which is referred to in the Office Action, is not a window, but rather is an aperture shield.

Thus, it would not have been obvious to combine the teachings of Bernacki, Meyers, and Barrett. Besides, the combination of the references does not allow one to arrive at the present invention without the needed modifications and added features, which can only be gleamed from the present application. There has been no motivation provided to combine the stated references and to perform the modifications needed to arrive at the present invention. Referring to MPEP 706.02(j) and 2143, to establish a *prima facie* case of obviousness the prior art reference(s) must teach or suggest all the claim limitations. See *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Therefore, claims 1 and 17 are novel, nonobvious, and are in a condition for allowance. Since claims 2, 4, 7, 9, and 18-20 depend from claims 1 and 17, respectively, they are also novel, nonobvious, and are in a condition for allowance for at least the same reasons.

With respect to claim 7, the Office Action states that Bernacki would necessarily have a variable potential (on and off). Applicants have submitted that no matter how the term "variable potential" is defined, clearly it does not mean the ability to simply turn a device on and off. Applicants have defined the term "variable" to denote that it is subject to change, that it has multiple possible potentials, or that it has a potential that varies within a given range, see *Webster's Third New International Dictionary* and elsewhere. This is not taught or suggested by Bernacki. This limitation is also not taught or suggested by Meyer or Barrett. See also the arguments previously provided in the Response of January 20, 2006.

The Office Action again takes Official Notice with regards to the limitation of claim 9. Ordinarily, there must be some form of evidence in the record to support an assertion of common knowledge. General conclusions concerning what is "basic

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knowledge" or "common sense" to one of ordinary skill in the art without specific factual findings and some concrete evidence in the record to support these findings will not support an obviousness rejection. *In re Lee*, 277 F.3d at 1344-45, 61 USPQ2d at 1434-35 (Fed. Cir. 2002). The Examiner must provide specific technical and scientific reasoning to support his or her conclusion of common knowledge. *In re Soli*, 317 F.2d at 946, 37 USPQ at 801 (CCPA 1963). Applicants submit that no specific factual findings or concrete evidence has been put forth nor has any specific technical reasoning been put forth to support the Official Notice taken. Also, if Applicants challenge a factual assertion, as Applicants do herein, as not properly officially noticed or not properly based upon common knowledge, the Examiner must support the finding with adequate evidence. See 37 CFR 1.104(c)(2).

Rejection of claim 5 under 35 U.S.C. 103(a)

Claim 5 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Bernacki, Meyer, and Barrett and further in view of Beland (U.S. Pat. No. 5,241,260).

Since claim 5 depends from claim 1, it too is novel, nonobvious, and is in a condition for allowance for at least the same reasons.

Rejection of claim 6 under 35 U.S.C. 103(a)

Claim 6 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Bernacki, Meyer, and Barrett and further in view of Nakamura et al. (U.S. Pat. No. 5,517,545).

Since claim 6 depends from claim 1, it too is novel, nonobvious, and is in a condition for allowance for at least the same reasons.

Rejection of claims 8 and 22 under 35 U.S.C. 103(a)

Claims 8 and 22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bernacki, Meyer, and Barrett and further in view of Matsushita et al. (U.S. Pat. No. 6,526,122).

Since claims 8 and 22 depend from claim 1, they too are novel, nonobvious, and are in a condition for allowance for at least the same reasons.

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Rejection of claims 10, 12-16, and 21 under 35 U.S.C. 103(a)

Claims 10, 12-16, and 21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bernacki, Meyer, and Barrett and further in view of Yamaguchi (JP 54-151384).

Since claim 21 depends from claim 1, it too is novel, nonobvious, and is in a condition for allowance for at least the same reasons.

Claim 10 recites similar limitations as that of claims 1 and 17 and recites an imaging tube that includes a rotating target with a third voltage potential that decelerates electrons to generate x-rays within the imaging tube. A sealed electron beam source is external, separate, and sealed from the target and separates a source interior from a low-pressure cavity, which contains the rotating target. The sealed electron beam source includes a source housing. The source housing has a source window with a first voltage potential, that is approximately equal to the third voltage potential, and a source electrode. The source electrode has a second voltage potential and generates and emits electrons through the source window to the target.

As stated above, Bernacki, Meyer, and Barrett fail to teach or suggest a sealed electron beam source that separates a source interior from a low-pressure cavity. In addition, Bernacki, Meyer, and Barrett also fail to teach or suggest the stated electron beam source that is external, separate, and sealed from a rotating target that is located within the low-pressure cavity.

The Office Action admits that Bernacki fails to disclose a rotating target that is within a low-pressure cavity and a window that has a voltage potential that is approximately equal to a voltage potential of a target. The Office Action then states that Barrett provides such disclosure. Applicants submit that although Barrett may disclose a rotating target within a low-pressure cavity, Barrett fails, like Bernacki to disclose the sealed and separated beam source as claimed.

Yamaguchi, like Bernacki, Meyer, and Barrett, also fails to teach or suggest the novel sealed beam source arrangement claimed. In Yamaguchi, electrons are

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emitted from a cathode through an open hole 25 in a hood 21 to a target 17. The cathode is not sealed from the target 17.

Furthermore, none of the stated references teach or suggest a source window that has a voltage potential that is approximately equal to the voltage potential of a rotating target. The Office Action states that Barrett teaches a rotating target having a voltage potential. Applicants submit that this is irrelevant. Applicants submit that the disclosure of a target that has a voltage potential does not provide any suggestion that the target is at the same voltage potential as an electron source window. Applicants understand that x-ray tubes and x-ray systems in general contain a target with a voltage potential.

The Office Action also states that Yamaguchi teaches a window that has a voltage potential that is approximately the same as a target voltage potential. Applicants, respectfully, traverse and submit that regardless of whether this is true, the window of Yamaguchi is clearly not an electron beam source window. Yamaguchi discloses a hood 21 that has an opening 25. The hood surrounds an anode target 17. The hood 21 is not part of the cathode 12 nor does it surround the cathode 12. The cathode 12 does not have a window or an aperture and is clearly not at the same potential as the hood or the anode target 17. Also, the opening 25 is not a window structure and does not provide a sealed cavity, but rather is simply a hole in the hood 21. The configuration of Yamaguchi is substantially different than that claimed.

Thus, claim 10 is novel, nonobvious, and is in a condition for allowance for the above stated reasons. Also, since claims 12-16 depend from claim 10, they too are novel, nonobvious, and are in a condition for allowance for at least the same reasons.

With respect to claims 13 and 14, Matsushita, like Barrett and Yamaguchi, fails to provide a sealed electron beam source. The electron gun 50 of Matsushita has an openings 25a, 71a, and 72a, like the aperture 60 of Barrett and the hole 25 of Yamaguchi. The cavity around the target 32 of Matsushita is open to the cavity around the cathode 73. Thus, Matsushita fails to teach or suggest a low-pressure

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cavity defined by a sealed electron beam source or the same exhausted or filled with a low-pressure gas. Matsushita also fails to teach or suggest a source window that has a voltage potential that is the same as a rotating target. Thus, claims 13-14 are further novel and nonobvious for above-stated reasons.

Applicants also submit that not only do the stated references fail to teach or suggest several of the claimed limitations, but to combine and modify so many references is far reaching and clearly supports the argument that it would not have been obvious to perform such combinations and modifications.

Rejection of claim 23 under 35 U.S.C. 103(a)

Claim 23 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Bernacki, Meyer, Barrett, and Yamaguchi and further in view of Koller (U.S. Pat. No. 6,438,208).

Since claim 23 depends from claim 10, it too is novel, nonobvious, and is in a condition for allowance for at least the same reasons.

Rejection of claim 24 under 35 U.S.C. 103(a)

Claim 24 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Bernacki, Meyer, Barrett, Yamaguchi, and Koller and further in view of Richardson (U.S. Pat. No. 6,529,579).

Since claim 24 depends from claim 10, it too is novel, nonobvious, and is in a condition for allowance for at least the same reasons.

Claim 24 recites the limitations of the source window having feedthroughs, which are coupled to coolant channels within a coolant channel housing. Applicants submit that since none of the references teach or suggest a source window as claimed, that none of the references teach or suggest such a source window having feedthroughs as claimed. Koller and Richardson, like Bachmann, Meyer, Barrett, and Yamaguchi fail to disclose a source window of a sealed electron beam source. Koller and Richardson fail to disclose a source window of any kind. In Koller electrons are emitted from an electron source 106 within a cavity to impinge upon an anode 108. In Richardson electrons are also emitted through a single cavity and

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through a deflection device 110 to an anode 108. Notice that the x-ray windows 200 and 112 of Koller and Richardson are not source windows of a sealed electron beam source for which electrons pass as claimed, but rather are x-ray windows of an x-ray device for which x-rays pass. Thus, claims 23-24 are further novel and nonobvious for the above-stated reasons.


Applicants again submit that not only do the stated references fail to teach or suggest several of the claimed limitations, but to combine and modify so many references is far reaching and clearly supports the argument that it would not have been obvious to perform such combinations and modifications.

In light of the amendments and remarks, Applicants submit that all of the objections and rejections are now overcome. The Applicants have added no new matter to the application by these amendments. The application is now in condition for allowance and expeditious notice thereof is earnestly solicited. Should the Examiner have any questions or comments, the Examiner is respectfully requested to contact the undersigned attorney.

The Commissioner is hereby authorized to charge any additional fees or credit any overpayment to Deposit Account 50-0476.

Respectfully submitted,

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